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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

Forest Insect Laboratory
Coeur d'Alene, Idaho
April 11, 1942

To Officers in Charge of Organizations:

Enclosed is the Annual Forest Insect Status Report for Idaho and Montana for the Calendar Year 1941. It is requested that this report be circularized through that portion of your organization interested in forest protection.

Very truly yours,

JAMES C. EVENDEN
Senior Entomologist

Enclosure

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

ANNUAL FOREST INSECT STATUS REPORT
IDAHO AND MONTANA
1941

By James C. Evenden
Senior Entomologist
Division of Forest Insect Investigations

INTRODUCTION

Forest insects destroy large volumes of merchantable timber. During the past twelve years bark beetles have taken an annual toll of approximately 104,400,000 b.f. of white pine and 114,632,000 b.f. of ponderosa pine (lumber tally) from the forests of northern Idaho and Montana. The white pine loss is 25 percent of the volume of that tree species cut for lumber, while the ponderosa pine loss has been 77 percent of the annual lumber cut. To those familiar with our rapidly diminishing stocks of commercial saw timber it is obvious that this loss plays an important role in the industrial future of most urban communities of this region. The security of wood-using industries depends upon a permanent supply of merchantable timber. Sustained-yield forest management offers a practical solution for problems of future timber supply; yet the institution and maintenance of such plans are not simple procedures. As a forest area of sufficient acreage to produce the desired annual cut is the first requisite of such planning, it is essential that maximum crops be produced. To attain this objective the losses of merchantable timber from fire, insects, and disease must be reduced to a minimum.

It is the task of the Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine, to develop methods of preventing as well as to control destructive outbreaks of forest insects, and to extend to all land-managing agencies an adequate service of assistance in the institution and administration of methods tending to reduce insect damage to forest crops.

Although there are many species of insects which feed upon all portions of forest trees, it is fortunate that only a few of them are of primary importance. These few species can be placed into three broad classifications, namely, bark beetles, which feed between the bark and wood of healthy mature trees; defoliators, which feed upon the foliage of forest trees and shrubs; and wood borers, which injure such crude forest products as logs, poles, etc., when left in the woods during the summer months. Of the destructive bark beetles the mountain pine beetle, western pine beetle, Douglas fir beetle, and the Engelmann spruce beetle are of the greatest importance in this region. Species of defoliating insects appear in epidemic numbers from time to time, and a severe toll of the

host tree is often taken. A number of different wood-boring insects are always present to attack crude forest products when left in the woods for any period of time.

The first step in the direction of artificial control for the prevention of excessive losses of commercial and scenic timber resulting from insect attack is the early detection of potentially dangerous infestations. These data permit the institution of control at a time when the greatest benefits will be derived for a minimum of expenditure. In accepting the responsibility of an adequate entomological service to forest agencies, it is necessary for the Forest Insect Laboratory at Coeur d'Alene, Idaho, to take full advantage of all available sources of information relative to the existing status of forest insect conditions, in addition to its regular program of insect surveys. Of these sources the annual reports from the ranger districts of the Forest Service and National Park Service provide data which contribute materially towards this objective. As all timbered areas can not be surveyed annually, these sources provide the only data available between periods of more intensive surveys, and are invaluable to the building of a record of insect conditions throughout the region. A part of the service obligation of this laboratory has been an annual summarization of all available information as to the status of insect conditions within the States of Idaho and Montana, which is made available to interested agencies. This summary, "Annual Forest Insect Status Report", includes those insects considered as of secondary importance as well as the primary species, in order that the report may be complete.

SUMMARY TABULATION OF RANGER REPORTS RECEIVED FROM THE FOREST RANGERS OF REGION 1

Changes in forest insect infestations often occur so quickly that serious losses of valuable timber occur before the severity of the situation is recognized. To guard against such conditions it is essential that all land-managing agencies accept the responsibility of reporting to this office all unusual insect situations or apparent changes in the status of existing infestations. The importance of these reports should not be minimized, and sufficient data should be included to permit an analysis as to the seriousness of the situation in question. Past reports have been invaluable in providing a regional history of insect infestations, as well as a guide for planning more intensive examinations and surveys. Due to the uncertainty of future survey programs it is trusted that all officers of land-managing agencies will continue this valuable service with even more detailed reports.

	1938	1939	1940	1941
Number of forests reporting	17	16	17	17
Number of ranger districts reporting	91	94	81	94
Number of insect infestations reported	162	143	104	121
Number of reports depicting no infestations	7	16	28	13
Number of Dendroctonus reports	100	93	64	60
Number of fir engraver beetle reports	1	1	3	4
Number of spruce budworm reports	7	6	3	6
Number of hemlock looper reports	26	12	8	3
Number of larch sawfly reports	5	10	11	26
Number of miscellaneous reports		21	15	14
Increasing infestations	42	15	24	43
Decreasing infestations	49	43	39	21
Normal infestations	53	66	35	47
Infestations reported as no longer existing	17	18	6	5
Status of infestation unknown	1	1	0	3

PRIMARY BARK BEETLE INFESTATIONS

Mountain Pine Beetle (Dendroctonus monticolae Hopk.) in White Pine

The mountain pine beetle is the most destructive forest insect enemy of pines within the northern Rocky Mountain region. Large volumes of white pine are destroyed annually, with some stands being depleted to a serious degree. Because of the economic values of the tree species concerned, a large part of the annual insect survey program conducted by the Coeur d'Alene Laboratory has been directed to the white pine stands of the region. These surveys include areas where potentially dangerous infestations are known to exist or where there are no data concerning the status of conditions, and provide information necessary for the planning of control. As far as possible all white pine areas are covered every second year and at least every third year. As marked changes in insect populations occur from year to year, these frequent surveys are necessary to foresee the development of serious epidemics, which are always difficult and expensive to control. During the 1941 season the following data have been obtained from the different white pine forests through the medium of insect surveys, ranger reports, and observations.

Cabinet National Forest

Ranger reports from this forest listed for the first time what appears to be a rather serious infestation in an area of white pine at the head of Vermillion River. This area will be examined by representatives of this laboratory during the coming season. Check surveys of the Twelve Mile and Big Creek drainages were included as a part of the laboratory survey program, but only normal infestations were encountered.

Clearwater National Forest and Adjacent Private Lands

The survey of this forest was limited to a recheck of areas where the infestation was considered as potentially dangerous or where no information had been obtained during the past two seasons. This survey indicates that although there were no serious situations in this forest the infestation within the Sheep Mountain unit is considered as potentially dangerous and is expected to increase in severity during the coming season. In the Butte Creek unit, on parts of sections 8 and 17 along the eastern side of the creek, a rather heavy infestation exists. These areas will be reexamined during the 1942 season. The following table has been taken from Mr. Terrell's report of the Clearwater survey:

Units surveyed	Acres	Infested trees per acre 1940	Infested trees per acre 1941	Percent of stand killed 1940	Percent of stand killed 1941	Infested trees 1940	Infested trees 1941
CLEARWATER NATIONAL FOREST							
Sheep Mountain	2,880	.23	.25	.3	.4	662	720
Tepee Creek	1,280	.10	.11	.15	.3	128	141
CLEARWATER TIMBER PROTECTIVE ASSOCIATION							
Tepee Creek	640	.16	.0	.3	.0	102	0
Orogrande (LPP)	3,720	1.7	.73	No data	2.9	6,324	2,716
Alder Creek	13,000	.08	.10	.1	.3	1,040	1,300
Silver Creek	15,000	No data	.09		.3		1,350
Thompson Creek	1,700	.09	.12	.1	.3	153	204
Benton Creek	6,700	No data	.0		.0		0
Butte Creek	4,800	No data	.13		.4		624
Canal Gulch	1,000	No data	.07		.3		70

Glacier National Park

A number of white pine trees infested with the mountain pine beetle were removed from the Sprague Creek campground and Park headquarters during the season.

Coeur d'Alene National Forest

Prior to 1941 the annual survey of the Coeur d'Alene Forest included all white pine areas; however, during the past season this work was confined to specific areas where the infestation was considered as being potentially serious. Although there are potentially dangerous infestations in other areas, rather serious situations exist on the Sissons, Yellow Dog River, Yellow Dog Creek, and Downey Creek units. A number of these areas will be reexamined during the coming season. The data obtained from the survey of the different units of this forest are shown in the following table:

Units surveyed	Acres	Infested trees per acre 1940	Infested trees per acre 1941	Percent of stand killed 1941	Infested trees 1940	Infested trees 1941
Taylors	2,800	.20	.35	1.5	924	980
Forks-Cabin	5,440	.34*	.19	.5	1,780	1,034
Can Creek	1,760	.22	.36	1.3	387	634
West Fork	3,960	.08	.05	.2	316	198
Clay Creek	2,320	.41*	.28	.6	941	650
Sissons	4,700	.19	.51	1.6	892	2,397
Yellow Dog River	2,140	.41	.62	1.9	869	1,326
Yellow Dog Creek	4,140	.19	.29	.5	779	1,195
Downey Creek	4,120	.21	.52	.9	864	2,163
North Yellow Dog	840	.03	.06	.1	25	50
	32,240				7,777	10,627

* Infestation treated.

Kaniksu National Forest

A rather thorough survey was made of this forest during the past season, and although data were obtained from nearly all white pine areas, no alarming situations were indicated. The following tabulation shows the data obtained by this survey:

Unit	Acres	Infested trees per acre 1937	1939	1940	1941	% of stand killed 1941	Total infested trees 1941
Rapid Lightning Creek	1,400	1.84	1.22	.46	.07	.1	98
Lightning Creek	15,000	.015	.0		.0	.0	0
Myrtle Creek	5,600	.022	.05		.08	.7	448
Ball Creek	5,200	.128	.05		.05	.2	260
Lamb Creek	600	.0	.0		.28	1.5	168
Bismark	1,000	.074	.22		.19	1.1	190
Sullivan Creek	8,400	.050	.19		.04	.1	336
*Lion Creek	7,200	.143	.21		.05	.2	360
*Two Mouth Creek	8,500	.020	.01		.02	.2	170
*Indian Creek	12,700	.030	.08		.05	.07	635
*Hunt Creek	7,900	.040	.16	.0	.09	.5	711
*North Fork East River	5,800	.021	.25		.10	.5	580
*Middle Fork East River	8,400	.013	.03		.0	.0	0
*Lost Creek	1,300	.024	.98	.21	.09	.35	117
	89,000				.05	.31	4,073

* State ownership.

St. Joe National Forest

A few normal or decreasing infestations of the mountain pine beetle in white pine were included in the 1941 ranger reports of insect conditions. In addition to these reports a few units were rechecked as a part of the annual survey program of this laboratory. The data obtained from this survey are shown in the following tabulation:

Unit area	Acres	Infested trees per acre	Percent of stand killed	Total infested trees
Elk River (Potlatch Creek)	24,832	.05	.2	1,240
Clarkia (Cramp Creek)	1,920	0	0	0
Gold Creek	10,280	.03	.1	308
Turner Flats	21,700	.02	.06	434
Bear Skull (Bluff Creek)	6,560	.04	.5	262
(Alpine Creek)	1,600	.10	.3	160
	66,892	.04	.2	2,404

From these data it would seem that the only questionable area is the Alpine Creek drainage, where a relatively light but potentially dangerous infestation exists. This area will be examined again in 1942.

Kootenai National Forest

Annual ranger reports referred to an infestation which was reported in 1940 as occurring in connection with the Spread Creek fire. This report stated that practically all fire-injured trees and 100 or more green trees outside the fire lines had been attacked by the mountain pine beetle, but that the infestation had been controlled by the removal, through logging in 1941, of about 95 percent of the infested trees.

Flathead National Forest

Losses of white pine along the south fork of the Flathead River were again reported from the Coram District of the Flathead Forest. This infestation has been in existence for many years, but it would seem that the value of the timber at stake does not justify the action necessary to prevent or reduce this loss.

Mountain Pine Beetle in Lodgepole Pine

From 1925 to 1935 the mountain pine beetle destroyed at least 38 percent of the merchantable lodgepole pine in the States of Idaho and Montana. This epidemic has since been reduced to a somewhat normal condition due primarily to the lack of favorable host material within the infested areas. Ranger reports listed lodgepole pine infestations in the Yellowstone National Park and on the Absaroka, Beaverhead, Deerlodge, Flathead, Gallatin, Helena, Kaniksu, Kootenai, Lolo, Nezperce and St. Joe National Forests. None of these situations were considered as alarming; however, it is imperative that frequent examinations of these areas be made if further depredations are to be prevented through the institution of control. On the Clearwater National Forest there is a serious lodgepole pine infestation in the West Elk, Crystal, and Silver Creek drainages. As this infestation occurs in a mixed stand of lodgepole pine and white pine, the situation is viewed with considerable apprehension, as it is not known if the more valuable tree species will be attacked. This area will be kept under annual observation. The serious infestations which were present on the Minidoka and Cache National Forests a few years ago have been successfully reduced by direct control. This is also true of the infestation on the Grand Teton National Park, which was reduced to a normal status by control measures during the past season.

Mountain Pine Beetle Infestations in Whitebark Pine

For the past ten years there has been a serious infestation of the mountain pine beetle in practically all whitebark pine stands of the northern Rocky Mountain area. Although during the past few years this epidemic has decreased in severity, there are still rather severe losses occurring in many stands of this tree species. Infestations were again reported from the Absaroka, Beaverhead, and Gallatin National Forests, and the Yellowstone National Park. In some of the infested areas the loss has been quite severe, with as much as 80 percent of the entire stand being destroyed. Rather severe losses are still occurring within the Yellowstone Park.

Mountain Pine Beetle in Ponderosa Pine

Light infestations of the mountain pine beetle in ponderosa pine were reported from the Custer, Lolo, and Nezperce National Forests. The infestation on the Lolo Forest is considered as being potentially dangerous and will be examined during the coming season.

Western Pine Beetle (Dendroctonus brevicomis Lec.) in Ponderosa Pine

Infestations of the western pine beetle, which vary in severity from year to year, are present in all ponderosa pine stands of Idaho and Montana. Unfortunately the importance of this insect is often underestimated, as over a period of years the annual loss, which occurs as

scattered trees throughout the stand, often amounts to a large percent of the merchantable volume. The past season's ranger reports listed infestations of the western pine beetle on the Bitterroot, Cabinet, Kootenai, and Nezperce National Forests. Of these situations the infestation reported as scattered throughout the ponderosa pine stands of the Fisher River drainage (Kootenai National Forest) must be viewed with some alarm, as past losses have been serious in this general area. A survey of specific areas on the Weiser, Idaho, and Payette National Forests did not indicate any alarming situations, although so-called normal infestations are present in all stands.

Douglas Fir Beetle (Dendroctonus pseudotsugae Hopk.) in Douglas Fir

With Douglas fir becoming of greater commercial value within the northern Rocky Mountain region, losses resulting from attacks of the Douglas fir beetle are no longer of secondary importance. Infestations of this beetle, which vary in severity, are present in most all Douglas fir stands of the region. In some areas severe losses have occurred, with a large percent of the stand being destroyed in a few years, while in other forests the damage has been rather negligible. Control measures directed against small localized outbreaks of this insect have met with good success.

Douglas fir beetle infestations were reported by district rangers from the Glacier and Yellowstone National Parks, and the Absaroka, Bitterroot, Deerlodge, Flathead, Gallatin, and St. Joe National Forests. In addition to these reports, infestations are known to be present on the Coeur d'Alene, Clearwater, Sawtooth, Cache, and Minidoka National Forests.

Engelmann Spruce Beetle (Dendroctonus engelmanni Hopk.) in Engelmann Spruce

A few years ago (1937-1939) epidemics of the Engelmann spruce beetle occurred in many spruce stands of the northern Rocky Mountains. At the present time these outbreaks have subsided to the so-called normal infestation found in all stands of mature spruce trees. During the rather short course of these epidemics extremely heavy losses occurred, with most of the trees above 10 inches in diameter being killed. This is especially true of a large area in the northwest corner of Yellowstone Park.

Engelmann spruce beetle infestations were reported by district rangers on the following forests: Absaroka, Custer, Gallatin, and St. Joe. Although none of these situations were considered as serious, their importance must not be minimized and all such areas should be subjected to frequent observation.

INFESTATIONS OF PRIMARY FOREST DEFOLIATORS

The most important insects which feed upon the foliage of forest trees are the caterpillars of certain moths and butterflies and the larvae of a group of insects called sawflies. The sawflies belong to the same group of insects as bees and wasps. They are so named because the female is equipped with a saw-like appendage at the tip of the abdomen which is used to slit open leaves or stems, in which an egg is placed. The population of these injurious species is usually held down by the activity of natural enemies to where no serious damage occurs. When some natural disturbance takes place and lessens the effectiveness of natural controlling forces, the population of the defoliator increases rapidly and serious damage results. In some instances such outbreaks last but a short time (two or three years) or until natural enemies again gain supremacy, while in others the epidemic prevails for years.

Larch Sawfly (Nematus erichsonii Hartig)

Until 1933 the larch sawfly was considered as a destructive insect of the eastern United States; however, in 1934 an outbreak was recorded on the Flathead National Forest near the Canadian border, and the year previous it had been recorded in Canada. It is not known if this outbreak originated from the forests of the Lake States or if the insect was indigenous to this region and in an unobservable control by natural enemies. During the past seven years the infestation has spread throughout the forests of western Montana and northern Idaho, which would seem to give strength to the possibility of the outbreak originating from some source. During the past season infestations of this defoliator were reported from the Cabinet (5), Clearwater (5), Coeur d'Alene (1), Flathead (2), Kootenai (4), Lolo (4), and St. Joe (4) National Forests. These few (25) reports do not depict the extent of this outbreak, as the insect is present in practically all larch stands of the region, which includes the Glacier National Park and all public and privately owned lands, although they no doubt record the most serious situations of each of the forests. The future of this outbreak is difficult to foresee. Although larch can withstand rather severe defoliation for a number of years, a continued injury will undoubtedly result in severe damage to the injured trees. As yet no losses of timber have been reported.

Spruce Budworm (Harmologa fumiferana Clem.)

The first record of this insect within the western United States was taken at Priest Lake in 1922. Although previous to that time it was considered as an insect peculiar to the northeastern states, it is now rather generally believed that it is also a native of this region and not an introduced species. During the years following the appearance of this insect the infestation spread throughout the northern Rocky Mountains until in 1928 reports of defoliation included nearly 800,000 acres. Although considerable damage occurred, it was confined to the less important tree species of the region. During later years the epidemic died down to where there were only scattered infestations which were more or

loss localized. During the past season increasing infestations of this insect were recorded from the Beaverhead (Engelmann spruce) and the Gallatin (Douglas fir) National Forests and Yellowstone National Park. Decreasing infestations were recorded on the Helena (Douglas fir), Kootenai, Lolo (Engelmann spruce), and Nezperce (white fir) National Forest. The infestation reported from the Bechler River area of the Yellowstone Park is the second recorded outbreak of this insect that has occurred in this area.

Hemlock Looper (Ellopia fiscellaria lugubrosa Hlst)

Although many moths were observed within the forests of the region in 1936, it was not until 1937 that the severity of the defoliation resulting from a widespread outbreak of this insect became sufficiently severe to attract attention. During that season severe defoliation was reported from 57 areas in Idaho and Montana, which was the first record of this insect, an important enemy of Pacific Coast spruce and hemlock for many years, within the region. Although most of these spot outbreaks only lasted through the 1938 season, a large percent of the alpine fir within the defoliated areas died as a result of the practically complete defoliation. The greatest importance attached to this loss is the increased fire hazard along ridge tops.

MISCELLANEOUS INSECT INFESTATIONS

Western Balsam Bark Beetle (Dryocoetes confusus Sw.)

Infestations of this insect in alpine fir (Abies lasiocarpa) were reported from the Beaverhead and Lolo National Forests and Glacier National Park, and it is known that throughout the region this insect is active in all mature stands of this tree species. As alpine fir constitutes a primary forest type, this loss is not overly serious, as usually only the older decadent trees are killed, which are soon replaced by younger trees. There have been severe outbreaks which have destroyed a large percent of the trees in a few years.

Fir Engraver (Scolytus ventralis Lec.)

Infestations of this insect in white fir (Abies grandis) were reported from the Cabinet and Flathead National Forests. Other infestations are known to be present throughout the white fir stands of the region. Losses resulting from attacks of this insect usually occur as scattered trees or in small groups of two or three, and are for the most part confined to the old decadent trees.

Oregon Pine Engraver (Ips oregoni Eichh.)

None of the usual sporadic outbreaks of this insect were included in this season's reports. However, a number of such situations were observed by the writer within the ponderosa pine stands of northern Idaho, which were in nearly all instances associated with some abnormal occurrence of slash. As there are two or more generations of this beetle per year, accumulations of such favorable host material as logging or wood-cutting slash, windfalls, etc., often result in building such large populations that for a short period, usually one generation, healthy mature trees are attacked and killed. Usually by the time this damage is noted the danger from further loss has passed.

Spruce Gall Aphid (Adelges cooleyi Gill)

This insect was reported from the Kootenai, Nezperce and St. Joe National Forests, and is common throughout the region. It is of little economic importance except as an enemy of ornamental trees, where the dead galls become unsightly.

Tip Moth (Rhyacionia sp.)

Reports of the damage caused by this insect to the terminals of young ponderosa pine were again received from the Custer National Forest. This insect is quite important as a deterrent to the growing of ponderosa pine, as the larvae destroy the terminal buds, causing serious deformation and often death.

Lodgepole Needle Tier (Argyrotaenia pinatubana)

Outbreaks of this insect were reported from the Custer National Forest and Yellowstone National Park, where considerable damage has occurred. Although present in other areas, this insect reaches its greatest destructiveness on poor sites where the trees are not in a thrifty condition.

Pine Midge (Retinodoplosis sp.)

The pine midge, an insect that destroys the leaders and branch terminals of young ponderosa pine, continued its destructive activity in many natural and artificial plantations of the region. The destruction of these terminals causes a serious deformation of the trees, and in severe infestations the trees are often killed. A large percent of the trees in a plantation on the Cabinet National Forest (Pilgrim Creek) have been destroyed by this insect, and serious damage to natural ponderosa pine reproduction was reported from the Lolo, Cabinet, and Nezperce National Forests.

Pitch Nodule Moth (Petrova albicapitana Busck)

Reports of unusual activity by this insect were received from the Targhee and Custer National Forests. It is quite common throughout the region, but is of little importance.

Alder Flea Beetle (Altica bimarginata)

An outbreak of the alder flea beetle was reported from the Deerlodge National Forest, with alder and willow being defoliated. Outbreaks of this small blue-black beetle appear from time to time, and although serious defoliation occurs, little if any permanent damage follows.

Engelmann Spruce Weevil (Pissodes engelmanni Hopk.)

A serious outbreak of this insect was recorded in the Picket Creek drainage of the Custer National Forest, with at least 20 percent of the terminals of trees from 10 to 20 feet in height being destroyed during the past season. The seriousness of this infestation is not fully known, but it is obvious that many forked and misshaped trees will follow.

Leaf Spot of Poplars and Willows (Phyllosticta populina)

During the past season a severe disease of the foliage on poplars and willows was present throughout the region. Specimens of these diseased leaves were sent to Dr. Bedwell, Pathologist at Portland, Oregon, who identified the disease and stated that its prevalence and conspicuousness was probably the result of the moist season.

Cone Moth (Barbara colfaxiana?)

Damage to Douglas fir cones was reported from the Gallatin National Forest. This insect is quite common and is found throughout the region.

Poplar and Willow Borer (Cryptorhynchus lapathi Linn.)

The poplar and willow borer was introduced into the United States from Europe in 1882. During the past few years it has become established in the northwestern United States, where considerable damage has occurred.

During the past season intensive forest insect surveys were conducted on the following forested areas:

	Acres	Man-days	Cost
Private Lands			
Potlatch Timber Protective Association	18,752	14	$ 81.00
Clearwater Timber Protective Association	25,200	25	150.00
Boise-Payette Lumber Company	133,500	8	64.00
	177,452	47	295.00
		Supervision	66.00
		Total cost	361.00
Federal Lands			
Indian Service	None		
National Park Service			
Grand Teton Park	5,000	6	70.00
Forest Service			
Coeur d'Alene National Forest	32,240	157	883.00
Clearwater National Forest	4,160	20	116.00
Cabinet National Forest	3,500	12	83.00
Kaniksu National Forest	45,000	61	393.00
St. Joe National Forest	85,580	92	566.00
Weiser National Forest	20,220	12	96.00
	195,700	360	2,207.00
		Supervision	266.00
		Total cost	2,473.00
Idaho State Land Associated with:			
Potlatch Timber Protective Association	8,000	6	40.00
Clearwater Timber Protective Association	20,000	15	90.00
Pend Oreille Timber Protective Association	51,800	92	572.00
South Idaho Timber Protective Association	17,740	20	160.00
	97,540	133	862.00
		Supervision	100.00
		Total cost	962.00
Grand Totals	470,692	540	$3,796.00

The 1941 survey program included not more than 5% of the total forest acreage of the northern Rocky Mountain region, which supports timber stands susceptible to attacks of destructive bark beetles. Although the coverage of this small percent of the total area was satisfactory, the program was not sufficiently extensive to assure an early recognition of incipient outbreaks. An adequate coverage of this forest area to obtain data necessary for a proper knowledge of insect conditions should include from 15 to 20% of the total acreage. Part of this coverage would be in the nature of an extensive reconnaissance.